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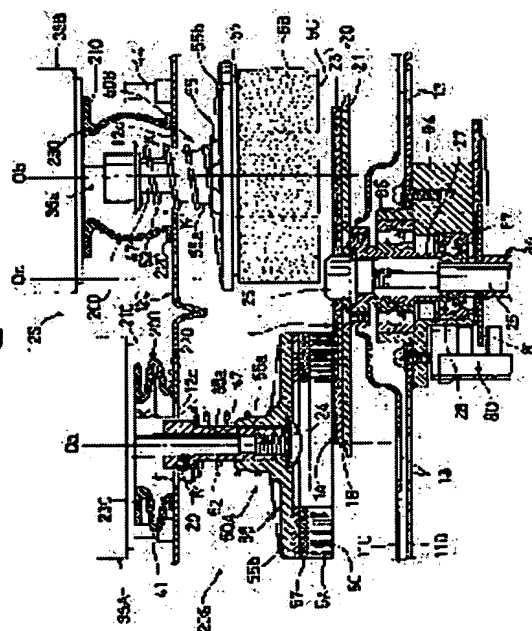
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(54) DISK CLEANER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a disk cleaner which efficiently prevents shavings from entering a motor room.

SOLUTION: A disk-polishing room (20S) in which a turntable on which a disk (1) is put is arranged and a motor room (12S) in which motors (35A and 35B) provided with polishing tools (5A and 5B) for polishing the surface to be polished of the disk 1 are installed in the output shaft (35a) through a polishing-tool holding tools (50A and 50B) are arranged to be next to each other. The output shaft (35a) of the motors (35A and 35B) is inserted in the disk-polishing room (20S) through shaft-play apertures (12c and 12c) formed in the bottom plate (12C) of the motor room (12S), and a cylindrical elastic body (200) consisting of gum or the like, which is extendable in the direction of height, is arranged so that the output shaft (35a) can be surrounded and the blockade between the bottom plate (12C) and the motors (35A and 35B) can always be made in order to prevent the shavings (K) from entering the motor room (12S) through the shaft-play apertures (12c and 12c).



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CLAIMS

[Claim(s)]

[Claim 1] The disk polish room where the turntable (20) on which a disk (1) is laid has been arranged (20S), the polish implement (5A --) for polishing the polished surface-ed (1A) of said disk (1) The motor housing by which the motor (35A, 35B) by which 5B was attached in the output shaft (35a) through the polish implement holder (50A, 50B) has been arranged (12S), ** -- the axial loose insertion hole (12c --) where it was formed side by side and said output shaft (35a) of said motor (35A, 35B) was formed in the bottom plate (12C) of said motor housing (12S) In the disk cleaner (10) inserted in said disk polish room (20S) through 12c That it should prevent that delete to said motor housing (12S) through said axial loose insertion hole (12c, 12c), and waste etc. invades (K), while surrounding said output shaft (35a) So that between said bottom plates (12C) and said motors (35A, 35B) may always be closed The disk cleaner characterized by arranging the tubed elastic body (200) which consists of rubber which can be expanded and contracted in the direction in alignment with axis of rotation (Oa, Ob) of said polish implement holder (50A, 50B).

[Claim 2] The disk cleaner according to claim 1 with which said motor (35A, 35B) and said polish implement (5A, 5B) are characterized by supposing perpendicularly that it is movable to said polished surface-ed (1A) of said disk (1).

[Claim 3] Said tubed elastic body (200) is a disk cleaner according to claim 1 or 2 characterized by considering as the shape of the shape of slack, and bellows.

[Claim 4] Said tubed elastic body (200) is a disk cleaner given in claim 1 characterized by having prepared the collar-like part (210 220) in the vertical edge, and at least one side of these collar-like parts (210 220) having fixed to said motor (35A, 35B) or said bottom plate (12C) thru/or any 1 term of 3.

[Claim 5] Lower housing (11) and up housing it enabled it to open up by using as the supporting point the hinge region material (14 14) prepared in the tooth-back side to this lower housing (11) (12), While ****(ing) and forming said disk polish room (20S) between the top-face plate (11C) of said lower housing (11), and said bottom plate (12C) of said up housing (12) A disk cleaner given in claim 1 characterized by forming said motor housing (12S) in said up housing (12) thru/or any 1 term of 3.

[Claim 6] A disk cleaner given in claim 1 characterized by enabling it to attach and detach alternatively said polish implement (5A, 5B) which has two or more said polish implement holders (50A, 50B), and was held at the polish implement holder (50A, 50B) of these plurality to said polished surface-ed (1A) thru/or any 1 term of 5.

[Claim 7] At the time of polish of said disk (1), it is said axis of rotation (it Oa(s)) of said polish implement (5A, 5B). Ob) arranges perpendicularly to said polished surface-ed (1A) -- having -- said polish implement (5A --) A disk cleaner given in claim 1 characterized by trying to make an one direction rotate said disk (1) according to the frictional force between 5B and said polished surface-ed (1A) thru/or any 1 term of 6.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the disk cleaner it is made to have said polished surface-ed polished by pressing against the polished surface-ed of said disk the polish implement which consists of a buff etc. that a blemish, dirt, etc. with which the front face of disks, such as an optical disk as an information record medium or a magneto-optic disk, was stained should be removed, and making it rotate.

[0002]

[Description of the Prior Art] When the front face, especially a recording surface are stained with a blemish, dirt, etc. in such a disk, it becomes impossible to read the recording information of the part stained with the blemish and dirt, and it becomes impossible appearance not only to worsen, but in recent years, to reproduce proper as sound and the object for images, or an information record medium for computers, although disks, such as a laser disc (trademark), CD (compact disk), CD-ROM, and DVD, have generally spread widely.

[0003] Therefore, manually, while taking time and effort and time amount, a blemish, dirt, etc. are fully unremovable in the former, although he is trying to remove a blemish, dirt, etc. of a disk manually using a cross etc. Especially in the place where disks, such as a used CD store and a library, are held in large quantities at, and are replaced frequently at, or a loan is performed, since a great effort will cleave to the blemish of a disk, or removal of dirt, enabling it not handicraft but to carry out mechanically and automatically is expected the blemish of this disk, and removal of dirt strongly.

[0004] The disk cleaner it is made to have said polished surface-ed polished is proposed by pressing the peripheral surface of the polish implement of the shape of a cylinder, such as a buff, against the polished surface-ed of the disk (recording surface), and rotating this polish implement, making the former, for example, JP,7-122038,A, rotate a disk in order to meet such a request.

[0005] Also in the applicant of this invention moreover, like printing in the patent No. 3007566 official report Press against the polished surface-ed of a disk the polish implement which consists of a buff etc., rotate this polish implement, and said polished surface is polished. To the disk cleaner and pan which were made to **** the axis of rotation of said polish implement perpendicularly to said polished surface-ed at the time of polish, as the advanced type The polish implement which consists of a buff etc. is pressed against the polished surface-ed of a disk, this polish implement is rotated, and said polished surface-ed is polished. At the time of disk polish Axis of rotation of said polish implement has been perpendicularly arranged to said polished surface-ed, and has proposed the disk cleaner it was made to make rotate said disk according to the frictional force between said polish implements and said polished surfaces-ed (refer to JP,2000-11601,A).

[0006]

[Problem(s) to be Solved by the Invention] by the way, with the disk cleaner of said proposal The disk polish room where the turntable on which a disk is laid has been arranged, The motor housing by which the motor by which the polish implement for polishing the polished surface-ed of said disk was attached in the output shaft through the polish implement holder has been arranged, ** -- it is formed side by side and the output shaft of said motor is inserted in said disk polish room through the axial loose insertion hole formed in the bottom plate of said motor housing.

[0007] The hinge region material prepared in the tooth-back side to lower housing and this lower housing is used more as the supporting point at a detail. By having up housing it enabled it to open up, moving said up housing to a lower housing position, and closing it between the top-face plate of said lower housing, and said bottom plate of said up housing that is, While said disk polish room is formed, said motor housing is formed in said up housing.

[0008] Moreover, in case said motor and said polish implement are made perpendicularly movable to the polished surface-ed of said disk and said disk is ground, press said polish implement against the polished surface-ed of said disk, it is made to rotate, and after polish termination makes said polish implement estrange from said polished surface-ed.

[0009] In the disk cleaner of such a configuration, there was a problem of invading in said motor housing through the clearance formed between said axial loose insertion hole which comes out when said disk is polished with said polish implement, and where the powder of waste or abrasives etc. was formed in the bottom plate of said motor housing by deleting, and the output shaft (polish implement holder) of said motor.

[0010] When said shaving waste etc. invades in said motor housing, the inside of said motor housing not only becomes dirty, but fault may arise in the mechanism elements (elevator style to which said motor and a polish implement are moved) currently arranged there. The place which this invention was made in view of a problem which was described above, and is made into the purpose is to offer the disk cleaner it enabled it to prevent effectively in invasion of the shaving waste into a motor housing etc.

[0011]

[Means for Solving the Problem] The disk cleaner concerning this invention that the aforementioned purpose should be attained The disk polish room where the turntable on which a disk is laid has been arranged fundamentally, The motor housing by which the motor by which the polish implement for polishing the polished surface-ed of said disk was attached in the output shaft through the polish implement holder has been arranged, ** -- it is formed side by side and comes to insert said output shaft of said motor in said disk polish room through the axial loose insertion hole formed in the bottom plate of said motor housing

[0012] And that it should prevent that delete to said motor housing through said axial loose insertion hole, and waste etc. invades, while surrounding said output shaft, it is characterized by arranging the tubed elastic body which consists of rubber which can be expanded and contracted along with axis of rotation of said polish implement holder so that between said bottom plates and said motors may always be closed.

[0013] In the desirable mode of this invention, said motor and said polish implement are perpendicularly made movable to the polished surface-ed of said disk. Moreover, preferably, said tubed elastic body is made into the shape of the shape of slack, and bellows, a collar-like part is prepared in the vertical edge, and at least one side of these collar-like parts fixes it to said motor or said bottom plate still more preferably.

[0014] In other desirable modes of the disk cleaner concerning this invention, while having lower housing and up housing it enabled it to open up by using as the supporting point the hinge region material prepared in the tooth-back side to this lower housing and forming said disk polish room between the top-face plate of said lower housing, and said bottom plate of said up housing, said motor housing is formed in said up housing.

[0015] It has two or more said polish implement holders, and enables it to attach and detach alternatively said polish implement held at the polish implement holder of these plurality to said polished surface-ed in other another desirable modes. Said axis of rotation of said polish implement is perpendicularly arranged to said polished surface-ed, and it is made to make an one direction rotate said disk in still more nearly another desirable mode according to the frictional force between said polish implements and said polished surfaces-ed at the time of polish of said disk.

[0016] In the desirable mode of the disk cleaner concerning this invention considered as the configuration like the above, while the tubed elastic body of the shape of the shape of slack and bellows expands, contracts for example, surrounds said output shaft in the direction which met between the bottom plate of said motor housing, and said motor at axis of rotation, it is arranged so that between said bottom plates and said motors may always be closed. [when said polish implement

is made to specifically estrange said tubed elastic body from said polished surface-ed of said disk (at the time of un-grinding)] for example, the condition in which the upper limit section (top collar-like part) fixed with adhesives, a double-sided tape, etc. in the inferior-surface-of-tongue section of said motor, and the lower limit section (lower flange-like section) carries out a pressure welding to said bottom plate in a from cartridge -- in other words In the condition that you were made to compress a little, the whole is infixed between said motors and said bottom plates.

[0017] And while said motor and said polish implement are made to descend perpendicularly towards the polished surface-ed side at the time of polish of said disk by the elevator style prepared in said motor housing (up housing) and said polish implement is pressed against said polished surface-ed, it is made to rotate by said motor. Under the present circumstances, said tubed elastic body is pressed by said motor, and it is made to compress it in the height direction, and it functions also as a cushioning material at the time of the maximum descent of said motor.

[0018] Thus, since between them is always closed with the disk cleaner of this invention, without the vertical edge of said tubed elastic body separating from said motor and said bottom plate Between said axial loose insertion hole which comes out when said disk is polished with said polish implement and where it deleted and waste, the powder of abrasives, etc. were formed in the bottom plate of said motor housing, and said output shaft (said polish implement holder) of said motor It can prevent effectively invading in said motor housing through the clearance formed.

[0019]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained, referring to a drawing. Drawing 1 is the perspective view showing the appearance of 1 operation gestalt of the disk cleaner concerning this invention. The disk cleaner 10 of an illustration implementation gestalt is that which made 5 inches disks, such as CD and DVD, applicable to polish. As shown in drawing 2 , it has the lower housing 11 and the up housing 12 (drawing 2 shows the condition of having opened to max) it enabled it to open up by using as the supporting point the hinge region material 14 and 14 prepared in the tooth-back side to this lower housing 11. So that what is necessary may be just to refer to said lower housing 11 and it may also understand drawing 3 - drawing 5 side **** 11A of a half-ellipse form, bottom plate 11B, top-face plate 11C that has a trapezoid crevice, and internal maintenance plate 11D -- since -- moreover, bottom plate 12C in which said up housing 12 has side **** 12A of a half-ellipse form, top-plate 12B, and a reverse trapezoid crevice -- since -- it has become.

[0020] Here, while disk polish room 20S is formed between said top-face plate 11C of said lower housing 11, and said bottom plate 12C of said up housing 12, motor housing 12S are formed in said up housing 12. In said lower housing 11, the revolving shaft 25 is perpendicularly held through the maintenance sleeve 28 at said internal maintenance plate 11D, and screwing immobilization of the spindle 26 is carried out at the upper limit section of this revolving shaft 25. This spindle 26 can be projected above said top-face plate 11C, it is closed, and attachment immobilization of the turntable 20 which consists of the substrate 21 and the rubber plate 23 which are laid in the condition that the disk 1 turned that recording surface (polished surface-ed) 1A up, and turned non-recording surface (label side) 1B to this spindle 26 down through the table attachment component 27 is carried out. Moreover, between said table attachment components 27 and said revolving shafts 25, the ball bearings 86 and 87 which can respond also to a thrust are arranged.

[0021] That the rotational frequency of said turntable 20 should be detected, the rotation detection disk 81 with which the slit of a predetermined number is formed by the equiangular distance is arranged really free [rotation], and the rotation detectors 80, such as a hole IC which detects the rotational frequency of this rotation detection disk 81, are arranged in the 1 side of this rotation detection disk 81 by the ball bearing 87 bottom of said bottom in said revolving shaft 25.

[0022] Moreover, you are made for the tubed spacer 84 and the fan drive wheel 90 to be attached outside, and it binds tight and said rotation detection disk 81, said tubed spacer 84, and said fan drive wheel 90 are being fixed to said rotation detection disk 81 bottom in said revolving shaft 25 so that it may a revolving shaft 25 and really [said] rotate with the nut 85 you were made to screw in the lower limit section of said revolving shaft 25.

[0023] Sheathing of the elastic ring 92 which consists of spring materials, such as rubber, is carried out to the periphery slot 91 of said fan drive wheel 90 in the condition that you were made to ****

elastically. The fan 100 supported free [rotation] by the supporter material 95 held through pivotable support shaft 94a at the attachment member 94 which fixed to said internal maintenance plate 11D is arranged in the side of this fan drive wheel 90.

[0024] This fan 100 is for carrying out suction exclusion of the shaving waste of said disk D, the powder of abrasives, etc. so that it may mention later, and the engagement section 102 like the serration gear tooth which carries out a pressure welding so that said elastic ring 92 of said fan drive wheel 90 may eat into the revolving shaft 101 moderately by the thrust of energization spring 94b arranged in the surroundings of said pivotable support shaft 94a is formed. Therefore, as for said fan 100, if said turntable 20 is made to rotate, the rotation driving force will be transmitted to said revolving shaft 101 through said revolving shaft 25 and said fan drive wheel 90, and it will do a rotation drive.

[0025] On the other hand, in said up housing 12, four guide rods 41, 42, 43, and 44 are perpendicularly arranged so that said top-plate 12B and said bottom plate 12C may be bridged. To said guide rods 41 and 42 located in left-hand side in drawing 5 among these guide rods 41-44 The supporting guide of the vertical sliding of the left-hand side sliding rise-and-fall member 31 containing GIADO motor 35A for carrying out the rotation drive of the polish implement 5A for blemish picking (rough machining) mentioned later is made possible. The supporting guide of the vertical sliding of the right-hand side sliding rise-and-fall member 32 containing GIADO motor 35B for carrying out the rotation drive of the polish implement 5B for polishes mentioned later is made possible to said guide rods 43 and 44 located in right-hand side in drawing 5.

[0026] The sliding sleeves 37 and 37 of the pair made to attach said left-hand side sliding rise-and-fall member 31 outside said guide rods 41 and 42 besides said GIADO motor 35A respectively possible [sliding], The left-hand side tie-down plate 66 attached so that these sliding sleeves 37 and 37 and said GIADO motor 35A might be connected, It has polish implement holder 50A holding polish implement 5A for said blemish picking arranged at the U-shaped left-hand side cam lift plate 67 attached in this left-hand side tie-down plate 66, and said GIADO motor 35 bottom.

[0027] The sliding sleeves 37 and 37 of the pair made to attach said right-hand side sliding rise-and-fall member 32 outside said guide rods 43 and 44 besides said GIADO motor 35B respectively possible [sliding] on the other hand, The right-hand side tie-down plate 68 attached so that these sliding sleeves 37 and 37 and said GIADO motor 35B might be connected, It has polish implement holder 50B holding polish implement 5B for said polishes arranged at the U-shaped right-hand side cam lift plate 69 attached in this right-hand side tie-down plate 68, and said GIADO motor 35B bottom.

[0028] And the output shafts 35a and 35a of said GIADO motors 35A and 35B Circular axial loose insertion hole 12c which can project downward, is closed from the lower limit surface part (front end surface part), and was formed in said bottom plate 12C, It is inserted in said disk polish room (20S) through 12c, and said polish implements 5A and 5B are attached in the lower limit of said output shafts 35a and 35a through said polish implement holders 50A and 50B.

[0029] Said each polish implement holders 50A and 50B with which said left-hand side sliding rise-and-fall member 31 and the right-hand side sliding rise-and-fall member 32 are equipped So that it considers as the same configuration, and what is necessary may be just to refer to drawing 3, drawing 4, and drawing 6 and they may be understood The connecting shaft 47 with a stage fixed so that it might rotate with the stop screw 29 at one to said output-shaft 35a of said GIADO motors 35A and 35B, The sliding supporter 55 which consists of collar-like part 55b formed successively by the lower limit of drum section 55with stage a stopped by the umbrella-like head of the stop screw 24 which outer fitting of the vertical sliding of was made possible to this connecting shaft 47 by spline fitting, and was thrust into the lower part of this connecting shaft 47, and this drum section 55a, It has the coil spring 52 ****(ed) between the step of said drum section 55a in this sliding supporter 55, and the upper part step of said connecting shaft 47, and said sliding supporter 55 is always caudad energized with said coil spring 52.

[0030] To the inferior-surface-of-tongue side of said collar-like part 55b of said sliding supporter 55 in the polish implement holders 50A and 50B arranged at said right and left So that axis of rotation Oa and Ob of said polish implement holders 50A and 50B may be made into a medial-axis line Bell shape polish implement 5for blemish picking A and polish implement 5B for polishes are attached

possible [desorption] through the attachment implement 57 which consists of a surface fastener marketed by brand-name BEROKURO etc., respectively.

[0031] Said polish implement 5 for blemish picking A and said polish implement 5B for polishes While the abrasives for blemish picking (rough machining) and the abrasives for polishes are made to adhere, respectively and those axes of rotation Oa and Ob are perpendicularly arranged to said polished surface-ed 1A of said disk 1 at the time of polish So that those base 5C is pressed against said polished surface-ed 1A, what is necessary may be just to refer to drawing 7 and it may be understood The axes of rotation Oa and Ob are ****(ed) on the straight line which passes along the axis of rotation Oc of said turntable 20 on which said disk 1 is laid, and said revolving shaft 25 (said spindle 26). And said polish implement 5 for blemish picking A and the rotation diameter Ds of said polish implement 5B for polishes, Dt is made larger than the radial width of face Ls of record section 1b in recording surface (polished surface-ed) 1A of said disk 1 which should be ground, and he is trying to overflow out of non-record section 1a to which a part of the periphery section is located in the center of said disk 1, and said disk 1.

[0032] And in this operation gestalt to enable it to press said polish implement 5 for blemish picking A, and said polish implement 5B for polishes against said polished surface-ed 1A of said disk 1 according to an individual He is trying for said left-hand side sliding rise-and-fall member 31 equipped with said polish implement holders 50A and 50B and said right-hand side sliding rise-and-fall member 32 to attach and detach alternatively to said polished surface-ed 1A by the cam type elevator style 60.

[0033] Said cam type elevator style 60 so that in addition to drawing 3 what is necessary may be just to refer to drawing 4 and drawing 5 and they may be understood The selection dial 61 arranged by the right lateral of said up housing 12, The actuation shaft 65 cross-linking is carried out to the longitudinal direction of said up housing 12, connection immobilization of the right end section is carried out at said selection dial 61, and it was made to rotate to it and one, The click stop 62 attached in said up housing 12 inside said selection dial 61 by the side of the right end of this actuation shaft 65, The left disk cam 71 by which carry out eccentricity to a left-hand side part a little, attachment immobilization is carried out from the center section of said actuation shaft 65, and it was made for said left-hand side cam lift plate 67 of said left-hand side sliding rise-and-fall member 31 to **** to the lift side (peripheral face), To this left disk cam 71, with the phase contrast of 180 degrees, carry out eccentricity to a right-hand side part a little, and attachment immobilization is carried out from the center section of said actuation shaft 65. The right disk cam 72 it was made to **** to the lift side (peripheral face) is provided to said right-hand side cam lift plate 69 of said right-hand side sliding rise-and-fall member 32, and it is constituted.

[0034] In this cam type elevator style 60, whenever it turns said selection dial 61 180 degrees Said left-hand side sliding rise-and-fall member 31 and the right-hand side sliding rise-and-fall member 32 are made to descend by turns. In connection with it, said polish implement 5 for blemish picking A held at said polish implement holders 50A and 50B and said polish implement 5B for polishes are pressed against said polished surface-ed 1A of said disk 1 by turns. Furthermore, the downward location of said said left-hand side sliding rise-and-fall member 31 and said right-hand side sliding rise-and-fall member 32, i.e., the contact pressure of said polish implements 5A and 5B to said polished surface-ed 1A of said disk 1, can be adjusted now by adjusting the actuation include angle of said selection dial 61. In addition, the condition that said polish implement 5A for blemish picking has the maximum downward location and said polish implement 5B for polishes in the maximum rise location as for drawing 6 is shown.

[0035] Toride 15 with [for opening and closing it in the transverse-plane lower part] hanging section 15a is attached in said up housing 12. Moreover, said hanging section 15a of this Toride 15 It is inserted and hung on stop hole 11a which he is trying to bend in the direction of inside and outside at the time of opening and closing of said up housing 12, and was prepared in the transverse-plane side edge section of said top-face maintenance plate 11C of said lower housing 11. Moreover, as shown in drawing 4 , when said up housing 12 is opened by max, the buffer type stop members 79 and 79 which stop said hinge region material 14 and 14 are formed in the tooth-back upper part of said lower housing 11.

[0036] furthermore, in the periphery transverse plane of said lower housing 11 A control panel 19 is

attached. To this control panel 19 The timer dial 18 grade a start switch 16, the actuation lamp 17, and for polishing time setting is arranged. In the left end section of said top-face maintenance plate 11C of said lower housing 11 As shown in drawing 2 , when said up housing 12 is shut, the safety switch 75 with which it is pressed by the bottom plate 12C, and a power circuit (not shown) is switched to ON condition from an OFF condition is arranged. If said safety switch 75 is not in ON condition (i.e., if the disk cleaner 10 of this operation gestalt is not after said up housing 12 is shut), even if it pushes said start switch 16, said GIADO motors 35A and 35B will start it.

[0037] moreover, to said top-face plate 11C of said lower housing 11, and said internal maintenance plate 11D Many exhaust ports 13 and 13 for [which comes out when said disk 1 is polished by said polish implement 5for blemish picking A and said polish implement 5B for polishes so that what is necessary may be just to refer to drawing 3 and drawing 4 and they may be understood] deleting and discharging waste, the powder of abrasives, etc. in said lower housing 11, and -- are formed. In said lower housing 11, that said shaving waste, powder of abrasives, etc. should be attracted through said exhaust ports 13 and 13 and -- The above mentioned fan 100 is formed, and as shown in drawing 2 , the blast area 130 with the filter for carrying out uptake of the powder of said shaving waste in the air attracted by said fan 100 or abrasives is formed in one side face of said lower housing 11.

[0038] It adds to the above-mentioned configuration. With the disk cleaner 10 of this operation gestalt Said axial loose insertion hole 12c formed in said bottom plate 12C of said up housing 12 (said motor housing 12S), That it should prevent that delete to said motor housing 12S through 12c, and K (refer to drawing 6), such as waste, invades among said bottom plate 12C and said GIADO motors 35A and 35B Height as shown in drawing 8 (axis-of-rotation-Oa [aforementioned] and it Ob (s) at the time of wearing) While surrounding said output shafts 35a and 35a of said motors 35A and 35B, the tubed elastic body 200,200 made of the rubber (CR rubber) of a slack-like pair which can be expanded and contracted in the direction in alignment with Oc and with which the center section swelled in the direction of a path It is arranged so that between said bottom plate 12C and said motors 35A and 35B may always be closed.

[0039] As for said tubed elastic body 200, the top collar-like part 210 and the lower flange-like section 220 of size and smallness are specifically prepared in the vertical edge. The upper limit section (said top collar-like part 210) Adhesives, a double-sided tape, etc. fix by 230 to the lower limit surface part (front end surface part) of said motors 35A and 35B. [when said polish implements 35A and 35B are made for the lower limit section (said lower flange-like section 220) to press by said polished surface-ed 1A of said disk 1 (at the time of polish)] The whole is infixed in the condition that you were made to compress a little, between said motors 35A and 35B and said bottom plate 12C so that a pressure welding may be carried out to said bottom plate 12C in a from cartridge.

[0040] In case the disk cleaner 10 of this operation gestalt considered as such a configuration is used and the blemish and dirt of a disk 1 are removed, usually the up housing 12 is opened (condition shown in drawing 2), and a disk 1 is turned on a turntable 20, the polished surface-ed 1A is turned up, it places first, and said up housing 12 is shut. Then, it chooses by any the existence of the blemish of said disk 1 etc. shall be taken into consideration, the selection dial 61 shall be turned, and it shall polish between polish implement 5for blemish picking A, and polish implement 5B for polishes (only with dirt, when there is no blemish). polish implement 5B for polishes -- choosing -- said polish implement 5A to said disk 1 or 5B presses, the force is adjusted, further, the timer dial 18 is set suitably and a start switch 16 is pushed.

[0041] Said polish implement 5A or 5B chosen by said selection dial 61 descends by this, and it is pressed against said polished surface-ed 1A of said disk 1. As shown in drawing 3 and drawing 6 , in the condition that the axis of rotation Oa and Ob of said polish implements 5A and 5B has been perpendicularly arranged to said polished surface-ed (1A) Said polish implement 5A or 5B currently pressed against said polished surface-ed 1A of said disk 1 rotates. Said disk 1 is made to rotate in connection with it by the frictional force between said polish implement 5A, or 5B and said polished surface-ed 1A. At the same time said polished surface-ed 1A of said disk 1 is polished Said polish implement 5A of said disk 1, The rotation driving force by the frictional force between 5B is transmitted to said fan 100 (revolving shaft 101) through said turntable 20, said revolving shaft 25, and said fan drive wheel 90. This fan 100 is interlocked with said turntable 20 mechanically, a

rotation drive is carried out and suction exclusion of shaving waste, the powder of abrasives, etc. is done by this fan 100 from the top-face maintenance plate 11C side.

[0042] Next, if said selection dial 61 is turned about 180 degrees, said actuation is repeated and the polishing activity of the disk 1 concerned finishes in changing a use polish implement to polish implement 5B for polishes from polish implement 5 for blemish picking A, said up housing 12 will be opened, said disk 1 will be removed, and said actuation will be repeated henceforth.

[0043] As mentioned above, it sets by the disk cleaner 10 of this operation gestalt. Since the axis of rotation Oa and Ob of said polish implement 5 for blemish picking A and said polish implement 5B for polishes is perpendicularly arranged to said polished surface-ed 1A at the time of polish The hit of said polish implements 5A and 5B to said polished surface-ed 1A is equalized, consequently it is hard coming to generate partial wear in said polish implements 5A and 5B, and the surface smoothness of polished surface (base) 5C of said polish implements 5A and 5B is maintained, and it is hard coming to generate faults, such as a wave, on said disk 1.

[0044] Moreover, by having made it rotate said disk 1 by the frictional force between said polish implements 5A and 5B and polished surface-ed 1A of said disk 1 While a result becomes beautiful as compared with the case where it is made to rotate compulsorily said disk 1 (said turntable 20 laid) by a motor etc. By also being able to prevent damage on said disk 1 by said polish implements 5A and 5B, and making said polish implements 5A and 5B into the bell shape further, since the force with said disk 1 impossible for is not added The force of making the predetermined hand of cut R and hard flow rotating the disk 1 by frictional force with these polish implements 5A and 5B is also mitigable. Since the motor for rotating a disk 1 in addition to it etc. is unnecessary, while being able to suppress the temperature rise of the disk by heat to generate, such as a motor, miniaturization of equipment, reduction of equipment cost, etc. are achieved.

[0045] Moreover, so that the predetermined load which controls rotation of said disk 1 by the frictional force between said polish implements 5A and 5B and said polished surface-ed 1A may add to said disk 1 Since said fan 100 for carrying out suction exclusion of the shaving waste of said disk 1, the powder of abrasives, etc. is interlocked with said turntable 20 on which said disk 1 is laid mechanically and the rotation drive is made to be done Necessary frictional force can be easily acquired between said polish implements 5A and 5B and said polished surface-ed 1A of said disk 1, and it becomes possible to polish more effectively said polished surface-ed of said disk 1.

[0046] Moreover, he is trying for said said two polish implement holders 50A and 50B to attach and detach alternatively on said disk 1 by said cam type elevator style 60. Since it enables it to be pressed according to an individual at polished surface-ed 1A of said disk 1, said polish implements 5A and 5B held at said polish implement holders 50A and 50B, respectively When performing blemish removal and a polish to said disk 1, it is necessary to choose which shall be pressed against said disk 1 between said polish implement 5A for blemish removal, and said polish implement 5B for polishes. Since it becomes unnecessary to exchange them, handling becomes easy and convenience is raised.

[0047] Furthermore, since said cam type elevator style 60 enables it to be adjusted, even if said polish implements 5A and 5B wear for it out and deform the contact pressure of said polish implements 5A and 5B to said polished surface-ed 1A of said disk 1 according to a polish activity, necessary can press it against said polish implements 5A and 5B, the force can be given, and removal of a blemish or dirt can be performed proper.

[0048] Furthermore, since said polish implements 5A and 5B are made into the bell shape and he is trying to press the base 5C against said polished surface-ed 1A, each part of said polish implements 5A and 5B to said disk 1 presses, it is easy to be equated weak, and said polished surface-ed 1A of said disk 1 can be polished much more equally.

[0049] Moreover, by making the rotation diameters Ds and Dt of said polish implements 5A and 5B larger than the radial width of face Ls of field 1b in polished surface-ed 1A of said disk 1 which should be ground said polish implements 5A and 5B -- and -- or all the fields in said polished surface-ed 1A of said disk 1 that should be ground can be polished, and equipment structure and a device are simplified without requiring moving said disk 1 in the direction of a path of this disk 1.

[0050] furthermore, the contact surface of said polish implements [as opposed to / since said polish implements 5A and 5B are energized with a coil spring 52 at said disk 1 side at the time of polish /

said disk 1] 5A and 5B -- it presses, the force is equalized and said polished surface-ed 1A of said disk 1 can be polished more equally.

[0051] In addition to said operation effectiveness, it sets by the disk cleaner 10 of this operation gestalt. While surrounding said output-shaft 35a of said motors 5A and 5B, the tubed elastic body 200 of the shape of slack which can be expanded and contracted in the height direction among said said bottom plate 12C and said motors 5A and 5B of motor housing 12S said bottom plate 12C and said motors 35A and 35B -- always -- fixing -- or it is arranged so that a pressure welding may be carried out and between them may always be closed.

[0052] Said tubed elastic body 200 Said motors 35A and 35B and said polish implement 5A, In the time of un-grinding [5B is made to go up / grind / by the direction estranged from said polished surface-ed 1A of said disk 1] In the condition of having elongated in drawing 3 and drawing 6 like the thing by the side of polish implement 5B for polishes, the top collar-like part 210 and the lower flange-like section 220 Or carry out a pressure welding and it sets at the time of polish of said disk 1. a said motor 35B side and said bottom plate 12C side -- fixing -- Although said motors 35A and 35B and said polish implements 5A and 5B are made to descend and said polish implements 5A and 5B are pressed against said polished surface-ed 1A of said disk 1 Under the present circumstances, although said tubed elastic body 200 is pressed by said motor 35A, it is made to compress it in the height direction and that center section juts it out in the direction of a path in drawing 3 and drawing 6 R> 6 like the thing by the side of polish implement 5A for rough machinings the top collar-like part 210 and the lower flange-like section 220 -- said motor 35B and said bottom plate 12C -- more - - strong -- fixing -- or a pressure welding is carried out and it functions also as a cushioning material at the time of the maximum descent of said motor 5A.

[0053] thus, with the disk cleaner 10 of this operation gestalt Since the vertical edges 210 and 220 of said tubed elastic body 200 are always closing between them, without separating from said motors 35A and 35B and said bottom plate 12C As shown in drawing 6 , when said disk 1 is polished with said polish implements 5A and 5B, it comes out and deletes. K, such as waste and powder of abrasives Said axial loose insertion hole 12c formed in said said bottom plate 12C of motor housing 12S, It can prevent effectively invading in said motor housing 12S through the clearance formed between 12c and said output-shaft 35a (said polish implement holders 50A and 50B) of said motors 35A and 35B.

[0054] As mentioned above, although 1 operation gestalt of this invention was explained in full detail, this invention is not limited to said operation gestalt, is the range which does not deviate from the pneuma of invention indicated by the claim, and can perform various modification in a design. For example, although one side of 5 inches disks, such as CD, is made applicable to polish, the disk cleaner 10 of said operation gestalt is not restricted to it, but if it is this contractor, in conformity with the same technical thought, it is easily applicable [cleaner] to that which made applicable to polish other disks with which the sizes of a laser disc etc. differ, the thing which made both sides of a disk applicable to polish.

[0055]
[Effect of the Invention] The disk cleaner concerning this invention so that I may be understood from the above explanation Since a tubed elastic body is arranged so that between the bottom plates of a motor and a motor housing may always be closed It can prevent effectively invading in said motor housing through the clearance formed between the axial loose insertion holes where it deleted and the powder of waste or abrasives etc. was formed in the bottom plate of said motor housing and the output shafts (polish implement holder) of a motor which come out when a disk is polished with a polish implement. Moreover, said tubed elastic body functions also as a cushioning material.

[Translation done.]

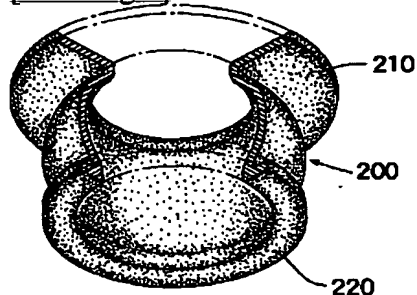
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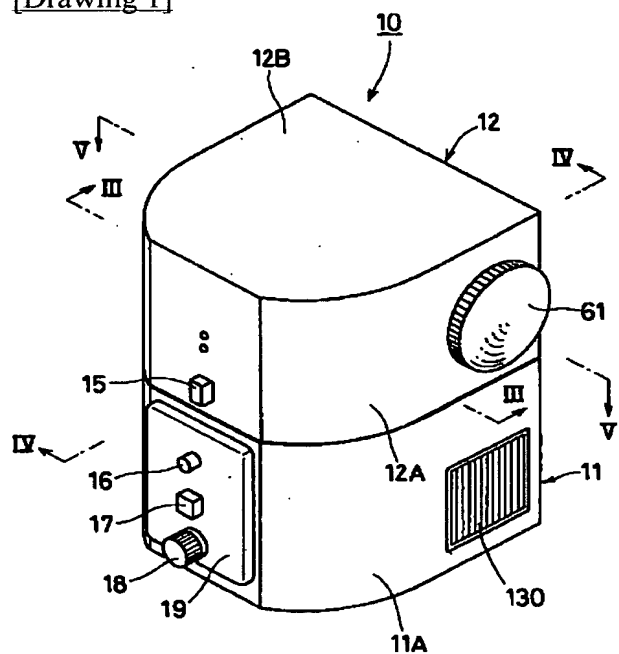
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DRAWINGS

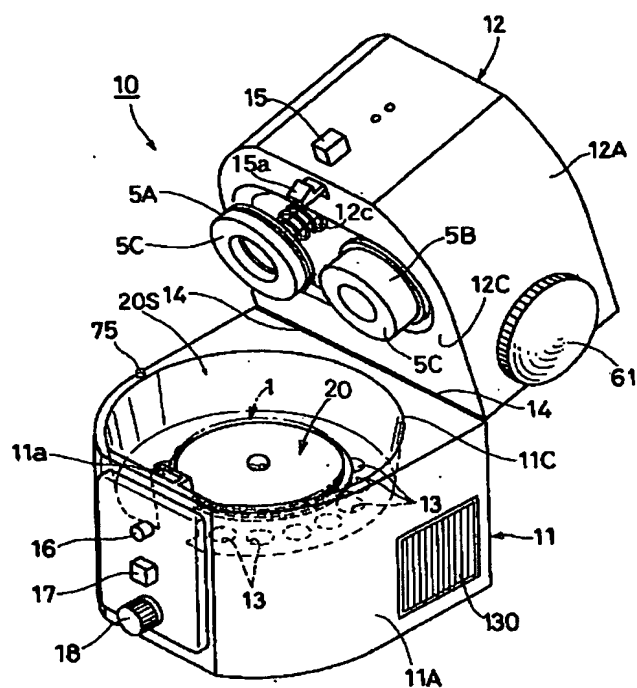
[Drawing 8]



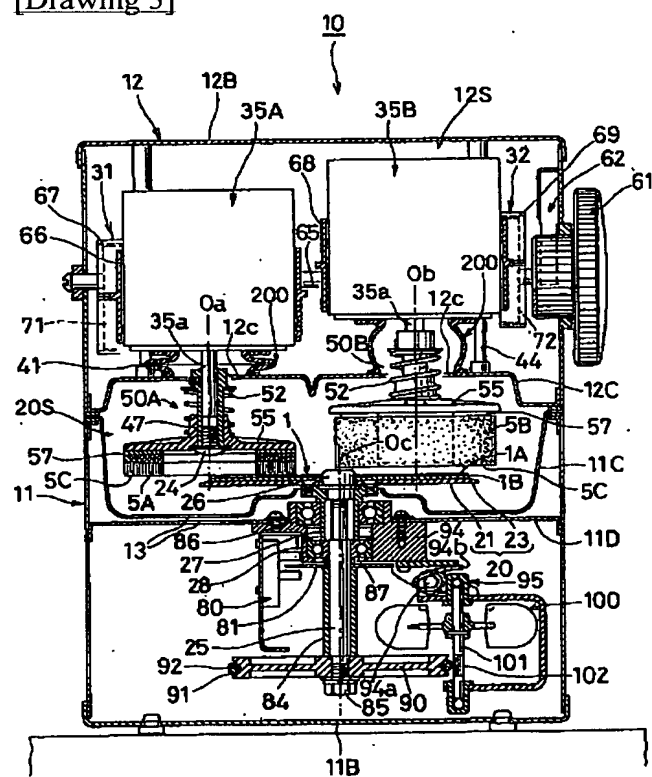
[Drawing 1]



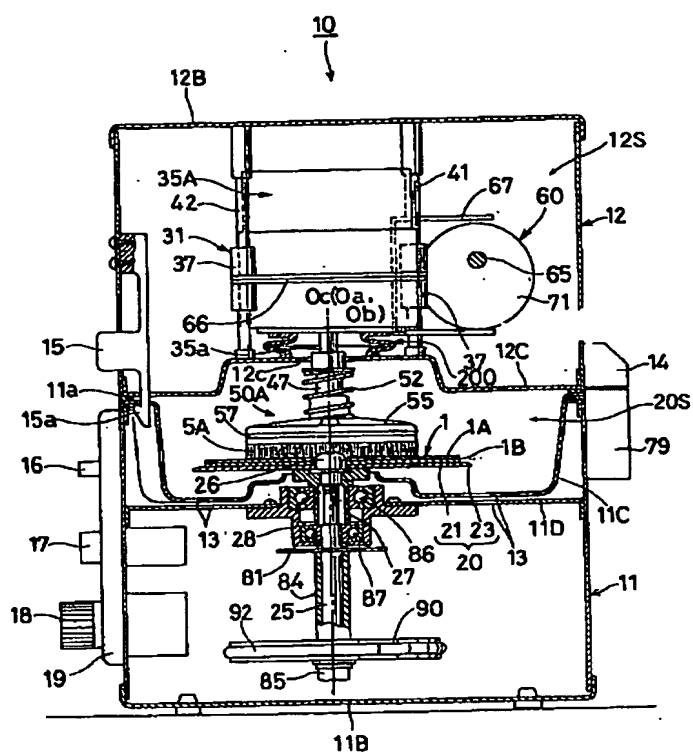
[Drawing 2]



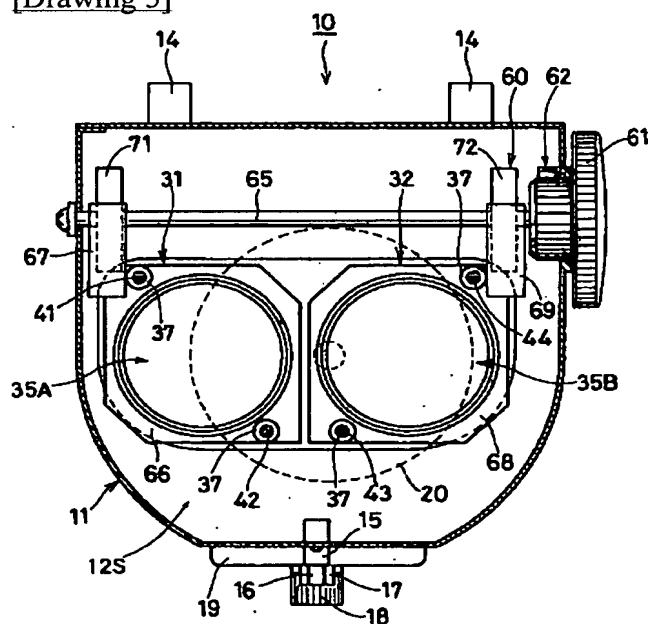
[Drawing 3]



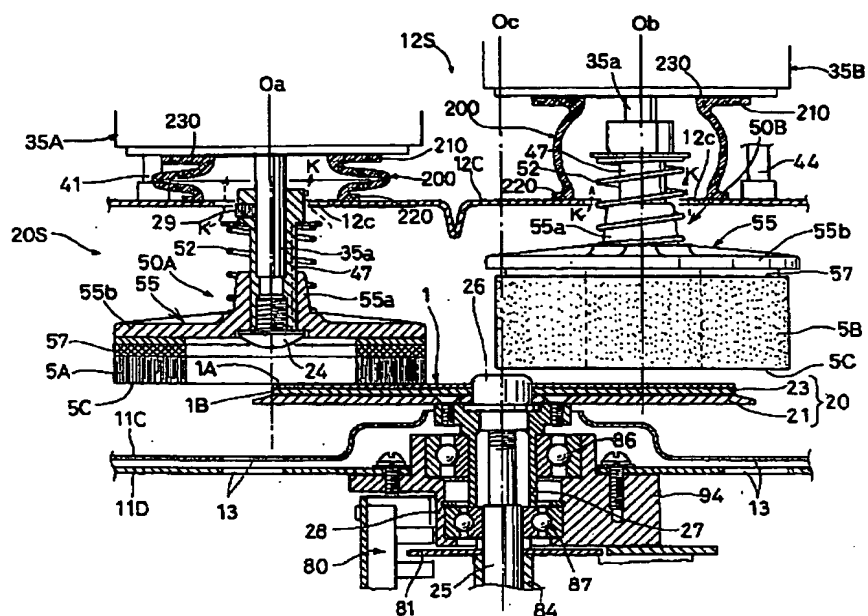
[Drawing 4]



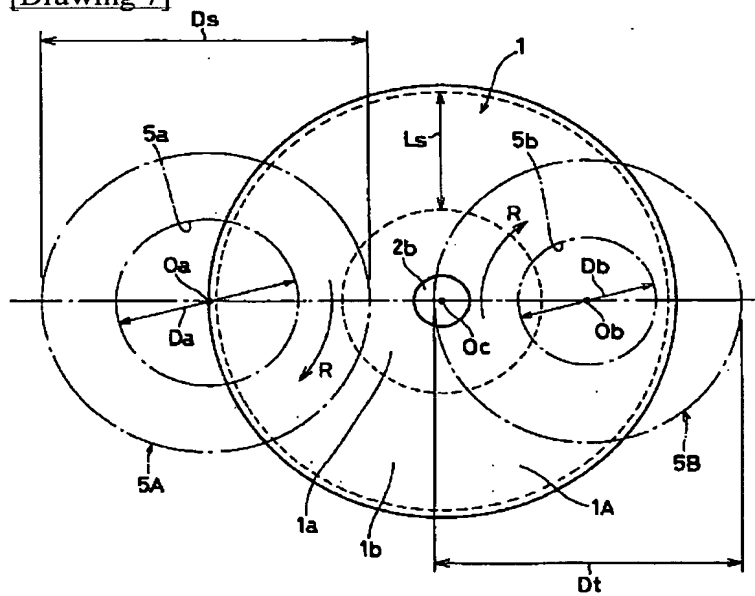
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]

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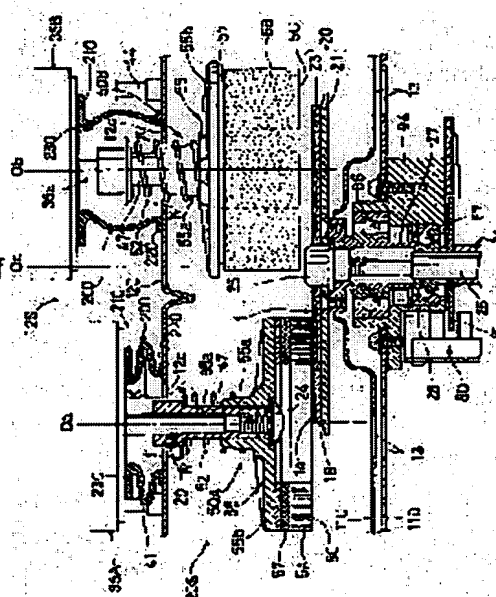
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TEZUKA NORITOSHI

(54) DISK CLEANER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a disk cleaner which efficiently prevents shavings from entering a motor room.

SOLUTION: A disk-polishing room (20S) in which a turntable on which a disk (1) is put is arranged and a motor room (12S) in which motors (35A and 35B) provided with polishing tools (5A and 5B) for polishing the surface to be polished of the disk 1 are installed in the output shaft (35a) through a polishing-tool holding tools (50A and 50B) are arranged to be next to each other. The output shaft (35a) of the motors (35A and 35B) is inserted in the disk-polishing room (20S) through shaft-play apertures (12c and 12c) formed in the bottom plate (12C) of the motor room (12S), and a cylindrical elastic body (200) consisting of gum or the like, which is extendable in the direction of height, is arranged so that the output shaft (35a) can be surrounded and the blockade between the bottom plate (12C) and the motors (35A and 35B) can always be made in order to prevent the shavings (K) from entering the motor room (12S) through the shaft-play apertures (12c and 12c).



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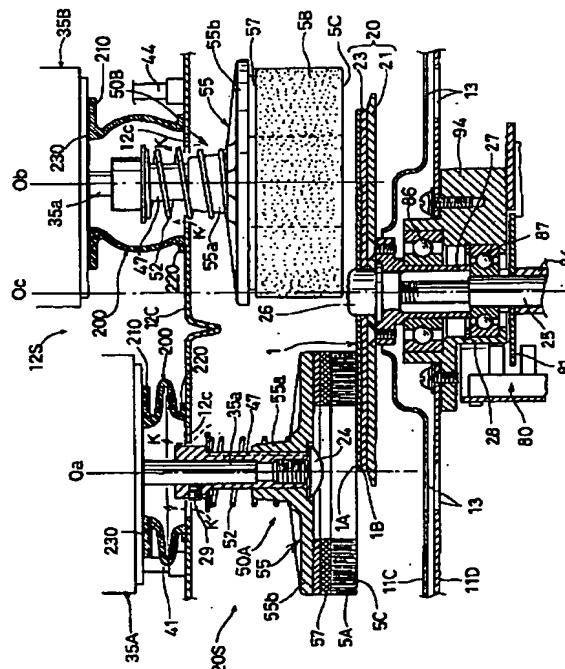
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(54)【発明の名称】 ディスククリーナ

(57)【要約】

【課題】 モーター室内への削り屑等の侵入を効果的に防止できるようにされたディスククリーナを提供する。

【解決手段】 ディスク(1)が載置されるターンテーブル(20)が配置されたディスク研磨室(20S)と、前記ディスク(1)の被研磨面(1A)を磨くための研磨具(5A、5B)が研磨具保持具(50A、50B)を介してその出力軸(35a)に取り付けられたモーター(35A、35B)が配置されたモーター室(12S)と、が隣り合わせに画成され、前記モーター(35A、35B)の前記出力軸(35a)が前記モーター室(12S)の底板(12C)に形成された軸遊挿穴(12c、12c)を介して前記ディスク研磨室(20S)に挿入され、前記軸遊挿穴(12c、12c)を介して前記モーター室(12S)に削り屑等(K)が侵入するのを阻止すべく、前記出力軸(35a)を包囲するとともに、前記底板(12C)と前記モーター(35A、35B)との間を常時封止するように、高さ方向に伸縮可能なゴム等からなる筒状弾性体(200)が配設されてなる。



【特許請求の範囲】

【請求項 1】 ディスク (1) が載置されるターンテーブル (20) が配置されたディスク研磨室 (20S) と、前記ディスク (1) の被研磨面 (1A) を磨くための研磨具 (5A、5B) が研磨具保持具 (50A、50B) を介してその出力軸 (35a) に取り付けられたモーター (35A、35B) が配置されたモーター室 (12S) と、が隣り合わせに画成され、前記モーター (35A、35B) の前記出力軸 (35a) が前記モーター室 (12S) の底板 (12C) に形成された軸遊挿穴 (12c、12c) を介して前記ディスク研磨室 (20S) に挿入されているディスククリーナ (10) において、前記軸遊挿穴 (12c、12c) を介して前記モーター室 (12S) に削り屑等 (K) が侵入するのを阻止すべく、前記出力軸 (35a) を包囲するとともに、前記底板 (12C) と前記モーター (35A、35B) との間を常時封止するように、前記研磨具保持具 (50A、50B) の回転軸線 (Oa、Ob) に沿った方向に伸縮可能なゴム等からなる筒状弾性体 (200) が配設されていることを特徴とするディスククリーナ。

【請求項 2】 前記モーター (35A、35B) 及び前記研磨具 (5A、5B) が、前記ディスク (1) の前記被研磨面 (1A) に対して垂直方向に移動可能とされていることを特徴とする請求項 1 に記載のディスククリーナ。

【請求項 3】 前記筒状弾性体 (200) は、樽状乃至蛇腹状とされていることを特徴とする請求項 1 又は 2 に記載のディスククリーナ。

【請求項 4】 前記筒状弾性体 (200) は、その上下端部に鉤状部 (210、220) が設けられ、それら鉤状部 (210、220) の少なくとも一方が前記モーター (35A、35B) 又は前記底板 (12C) に固着されていることを特徴とする請求項 1 乃至 3 のいずれか一項に記載のディスククリーナ。

【請求項 5】 下部ハウジング (11) と、この下部ハウジング (11) に対して背面側に設けられたヒンジ部材 (14、14) を支点として上方に開くことができるようにされた上部ハウジング (12) と、を有し、前記下部ハウジング (11) の上面板 (11C) と前記上部ハウジング (12) の前記底板 (12C) との間に前記ディスク研磨室 (20S) が形成されるとともに、前記上部ハウジング (12) に前記モーター室 (12S) が形成されていることを特徴とする請求項 1 乃至 3 のいずれか一項に記載のディスククリーナ。

【請求項 6】 前記研磨具保持具 (50A、50B) を複数個有し、それら複数個の研磨具保持具 (50A、50B) に保持された前記研磨具 (5A、5B) を、前記被研磨面 (1A) に対して選択的に接離することができるようにされていることを特徴とする請求項 1 乃至 5 の

いずれか一項に記載のディスククリーナ。

【請求項 7】 前記ディスク (1) の研磨時に、前記研磨具 (5A、5B) の前記回転軸線 (Oa、Ob) が、前記被研磨面 (1A) に対して垂直に配置され、前記研磨具 (5A、5B) と前記被研磨面 (1A) との間の摩擦力により前記ディスク (1) を一方向に回転させるようにされていることを特徴とする請求項 1 乃至 6 のいずれか一項に記載のディスククリーナ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、情報記録媒体としての光ディスクあるいは光磁気ディスク等のディスクの表面に付いた傷や汚れ等を除去すべく、前記ディスクの被研磨面にバフ等からなる研磨具を押し当てて回転させることにより、前記被研磨面を磨くようにされたディスククリーナに関する。

【0002】

【従来の技術】 近年、音響・映像用あるいはコンピューター用の情報記録媒体として、レーザーディスク (登録商標)、CD (コンパクトディスク)、CD-ROM、DVD 等のディスクが一般に広く普及しているが、このようなディスクにおいては、その表面、特に記録面に傷や汚れ等が付くと、見た目が悪くなるだけでなく、その傷や汚れが付いた部分の記録情報が読み取れなくなり、適正に再生できなくなる。

【0003】 そのため、従来においては、クロス等を使用して手作業でディスクの傷や汚れ等を落とすようにしているが、手作業では、手間及び時間がかかるとともに、傷や汚れ等を充分には除去できない。特に、中古 CD 店や図書館等のディスクを大量に保有し、頻繁に入替えあるいは貸出しが行われるところでは、ディスクの傷や汚れの除去に多大な労力が割かれることになるので、このディスクの傷や汚れの除去を手作業ではなく、機械的かつ自動的に行えるようにすることが強く望まれている。

【0004】 このような要望に応えるべく、従来、例えば特開平 7-122038 号公報には、ディスクを回転させながら、そのディスクの被研磨面 (記録面) にバフ等の円筒状の研磨具の周囲を押し当てて、該研磨具を回転させることにより、前記被研磨面を磨くようにされたディスククリーナが提案されている。

【0005】 また、本発明の出願人においても、特許第 3007566 号公報に所載のように、ディスクの被研磨面にバフ等からなる研磨具を押し当て、該研磨具を回転させて前記研磨面を磨くようにされ、前記研磨具の回転軸線を研磨時に前記被研磨面に対して垂直に配在するようにしたディスククリーナ、さらに、その改良型として、ディスクの被研磨面にバフ等からなる研磨具を押し当て、該研磨具を回転させて前記被研磨面を磨くようにされ、ディスク研磨時には、前記研磨具の回転軸線が前

記被研磨面に対して垂直に配置され、前記研磨具と前記被研磨面との間の摩擦力により前記ディスクを回転させるようにしたディスククリーナを提案している（特開 2000-11601 号公報参照）。

【0006】

【発明が解決しようとする課題】ところで、前記提案のディスククリーナでは、ディスクが載置されるターンテーブルが配置されたディスク研磨室と、前記ディスクの被研磨面を磨くための研磨具が研磨具保持具を介してその出力軸に取り付けられたモーターが配置されたモーター室と、が隣り合わせに画成され、前記モーターの出力軸が前記モーター室の底板に形成された軸遊挿穴を介して前記ディスク研磨室に挿入されている。

【0007】より詳細には、下部ハウジングと、この下部ハウジングに対して背面側に設けられたヒンジ部材を支点として、上方に開くことができるようにされた上部ハウジングと、を有し、前記下部ハウジングの上面板と前記上部ハウジングの前記底板との間、つまり、前記上部ハウジングを下部ハウジング側に倒して閉じることに

により、前記ディスク研磨室が形成されるとともに、前記上部ハウジングに前記モーター室が形成されている。

【0008】また、前記モーター及び前記研磨具は、前記ディスクの被研磨面に対して垂直方向に移動可能とされ、前記ディスクの研磨を行う際には、前記研磨具を前記ディスクの被研磨面に押し当てて回転させ、研磨終了後は、前記研磨具を前記被研磨面から離間させるようになっている。

【0009】このような構成のディスククリーナにおいては、前記ディスクを前記研磨具で磨いた際に出て来る削り屑や研磨材の粉等が、前記モーター室の底板に形成された前記軸遊挿穴と前記モーターの出力軸（研磨具保持具）との間に形成される隙間を介して前記モーター室内に侵入してしまうという問題があった。

【0010】前記モーター室内に前記削り屑等が侵入すると、前記モーター室内が汚れるだけでなく、そこに配設されている機構部品（前記モーター及び研磨具を移動させる昇降機構等）に不具合が生じることもある。本発明は、前記した如くの問題に鑑みてなされたもので、その目的とするところは、モーター室内への削り屑等の侵入を効果的に防止できるようにされたディスククリーナを提供することにある。

【0011】

【課題を解決するための手段】前記の目的を達成すべく、本発明に係るディスククリーナは、基本的には、ディスクが載置されるターンテーブルが配置されたディスク研磨室と、前記ディスクの被研磨面を磨くための研磨具が研磨具保持具を介してその出力軸に取り付けられたモーターが配置されたモーター室と、が隣り合わせに画成され、前記モーターの前記出力軸が前記モーター室の底板に形成された軸遊挿穴を介して前記ディスク研磨室

に挿入されてなる。

【0012】そして、前記軸遊挿穴を介して前記モーター室に削り屑等が侵入するのを阻止すべく、前記出力軸を包囲するとともに、前記底板と前記モーターとの間を常時封止するように、前記研磨具保持具の回転軸線に沿ったに伸縮可能なゴム等からなる筒状弾性体が配設されていることを特徴としている。

【0013】本発明の好ましい態様では、前記モーター及び前記研磨具が、前記ディスクの被研磨面に対して垂直方向に移動可能とされる。また、前記筒状弾性体は、好ましくは、樽状乃至蛇腹状とされ、さらに好ましくは、その上下端部に鏝状部が設けられ、それら鏝状部の少なくとも一方が前記モーター又は前記底板に固着される。

【0014】本発明に係るディスククリーナの他の好ましい態様では、下部ハウジングと、この下部ハウジングに対して背面側に設けられたヒンジ部材を支点として上方に開くことができるようにされた上部ハウジングと、を有し、前記下部ハウジングの上面板と前記上部ハウジングの前記底板との間に前記ディスク研磨室が形成されるとともに、前記上部ハウジングに前記モーター室が形成される。

【0015】他の別の好ましい態様では、前記研磨具保持具を複数個有し、それら複数個の研磨具保持具に保持された前記研磨具を、前記被研磨面に対して選択的に接離することができるようにされる。さらに別の好ましい態様では、前記ディスクの研磨時に、前記研磨具の前記回転軸線が、前記被研磨面に対して垂直に配置され、前記研磨具と前記被研磨面との間の摩擦力により前記ディスクを一方向に回転させるようにされる。

【0016】前記の如く構成とされた本発明に係るディスククリーナの好ましい態様においては、前記モーター室の底板と前記モーターとの間に、回転軸線に沿った方向に伸縮可能な、例えば樽状乃至蛇腹状の筒状弾性体が、前記出力軸を包囲するとともに、前記底板と前記モーターとの間を常時封止するように配設される。具体的には、前記筒状弾性体は、前記研磨具が前記ディスクの前記被研磨面から離間せしめられているとき（非研磨時）においては、例えば、その上端部（上側鏝状部）が前記モーターの下面部に接着剤、両面テープ等により固着され、その下端部（下側鏝状部）が前記底板に弾発的に圧接せしめられた状態、言い換えれば、全体が若干圧縮せしめられた状態で、前記モーターと前記底板との間に介装されている。

【0017】そして、前記ディスクの研磨時には、その被研磨面側に向けて前記モーター及び前記研磨具が、前記モーター室（上部ハウジング）に設けられた昇降機構により垂直に下降せしめられ、前記研磨具が前記被研磨面に押し当てられるとともに、前記モーターにより回転せしめられる。この際、前記筒状弾性体は、前記モータ

一に押圧されて高さ方向に圧縮せしめられ、前記モーターの最下降時にはクッション材としても機能する。

【0018】このように本発明のディスククリーナでは、前記筒状弾性体の上下端部が前記モーター及び前記底板から離れることなく、それらの間を常時封止しているので、前記ディスクを前記研磨具で磨いた際に出て来る削り屑や研磨材の粉等が前記モーター室の底板に形成された前記軸遊挿穴と前記モーターの前記出力軸（前記研磨具保持具）との間に形成される隙間を介して前記モーター室内に侵入してしまうことを効果的に防止できる。

【0019】

【発明の実施の形態】以下、本発明の実施の形態を図面を参照しつつ説明する。図1は本発明に係るディスククリーナの一実施形態の外観を示す斜視図である。図示実施形態のディスククリーナ10は、CD、DVD等の5インチのディスクを研磨対象としたもので、図2に示される如くに、下部ハウジング11と、この下部ハウジング11に対して背面側に設けられたヒンジ部材14、14を支点として上方に開くことができるようにされた上部ハウジング12（図2は最大に開いた状態を示す）と、を有し、前記下部ハウジング11は、図3～図5をも参照すればよくわかるように、半楕円形の側周板11Aと、底板11Bと、台形凹部を有する上面板11Cと、内部保持板11Dと、からなり、また、前記上部ハウジング12は、半楕円形の側周板12Aと、天板12Bと、逆台形凹部を有する底板12Cと、からなっている。

【0020】ここでは、前記下部ハウジング11の前記上面板11Cと前記上部ハウジング12の前記底板12Cとの間にディスク研磨室20Sが形成されるとともに、前記上部ハウジング12内にモーター室12Sが形成されている。前記下部ハウジング11内には、前記内部保持板11Dに保持スリーブ28を介して回転軸25が垂直に保持されており、この回転軸25の上端部にスピンドル26が螺合固定されている。該スピンドル26は、前記上面板11Cの上方に突出せしめられ、このスピンドル26に、テーブル保持部材27を介して、ディスク1がその記録面（被研磨面）1Aを上にし非記録面（ラベル面）1Bを下にした状態で載置される、基板21及びゴム板23からなるターンテーブル20が、取付固定されている。また、前記テーブル保持部材27と前記回転軸25との間には、スラストにも対応できるボールベアリング86、87が配置されている。

【0021】前記回転軸25における前記下側のボールベアリング87の下側には、前記ターンテーブル20の回転数を検出すべく、例えば等角度間隔で所定数のスリットが形成されている回転検出円板81が一体回転自在に配置され、この回転検出円板81の一侧方に該回転検出円板81の回転数を検出するホールIC等の回転検出

器80が配設されている。

【0022】また、前記回転軸25における前記回転検出円板81の下側には、筒状スペーサ84及びファン駆動ホイール90が外嵌せしめられ、前記回転検出円板81、前記筒状スペーサ84、及び、前記ファン駆動ホイール90は、前記回転軸25の下端部に螺合せしめられたナット85により前記回転軸25と一体回転するように締め付け固定されている。

【0023】前記ファン駆動ホイール90の外周溝部91には、ゴム等の弾性材料からなる弾性リング92が弾性的に張嵌せしめられた状態で外装されている。このファン駆動ホイール90の側方には、前記内部保持板11Dに固着された取付部材94に枢支軸94aを介して保持された支持部材95に回転自在に支持されたファン100が配設されている。

【0024】該ファン100は、後述する如くに、前記ディスクDの削り屑や研磨材の粉等を吸引排除するためのもので、その回転軸101には、前記ファン駆動ホイール90の前記弾性リング92が、前記枢支軸94aの回りに配設された付勢ばね94bの押圧力により適度に食い込むように圧接せしめられるセレーション歯の如き噛合部102が形成されている。したがって、前記ファン100は、前記ターンテーブル20が回転せしめられると、その回転駆動力が前記回転軸25及び前記ファン駆動ホイール90を介して前記回転軸101に伝達され、それによって回転駆動せしめられる。

【0025】一方、前記上部ハウジング12内には、前記天板12Bと前記底板12Cとを橋絡するように、垂直に四本のガイドロッド41、42、43、44が配設されている。これらのガイドロッド41～44のうち、図5において左側に位置する前記ガイドロッド41、42には、後述する傷取り（荒削り）用の研磨具5Aを回転駆動するためのギアードモーター35Aを含む左側摺動昇降部材31が上下摺動可能に支持案内され、図5において右側に位置する前記ガイドロッド43、44には、後述するポリッシュ用の研磨具5Bを回転駆動するためのギアードモーター35Bを含む右側摺動昇降部材32が上下摺動可能に支持案内される。

【0026】前記左側摺動昇降部材31は、前記ギアードモーター35Aの他、前記ガイドロッド41、42にそれぞれ摺動可能に外嵌せしめられた一対の摺動スリーブ37、37と、これらの摺動スリーブ37、37と前記ギアードモーター35Aとを連結するように取り付けられた左側取付板66と、この左側取付板66に取り付けられたコ字状の左側カムリフト板67と、前記ギアードモーター35の下側に配置された前記傷取り用の研磨具5Aを保持する研磨具保持具50Aと、を備えている。

【0027】一方、前記右側摺動昇降部材32は、前記ギアードモーター35Bの他、前記ガイドロッド43、

44にそれぞれ摺動可能に外嵌せしめられた一对の摺動スリーブ37、37と、これらの摺動スリーブ37、37と前記ギアードモーター35Bとを連結するように取り付けられた右側取付板68と、この右側取付板68に取り付けられたコ字状の右側カムリフト板69と、前記ギアードモーター35Bの下側に配置された前記ポリッシュ用の研磨具5Bを保持する研磨具保持具50Bと、を備えている。

【0028】そして、前記ギアードモーター35A、35Bの出力軸35a、35aは、その下端面部（前端面部）から下向きに突出せしめられており、前記底板12Cに形成された円形の軸遊挿穴12c、12cを介して前記ディスク研磨室（20S）に挿入されており、前記出力軸35a、35aの下端に前記研磨具保持具50A、50Bを介して前記研磨具5A、5Bが取り付けられている。

【0029】前記左側摺動昇降部材31及び右側摺動昇降部材32に備えられる前記各研磨具保持具50A、50Bは、同一構成とされており、図3、図4、図6を参照すればよくわかるように、前記ギアードモーター35A、35Bの前記出力軸35aに止めネジ29により一体に回転するように固定された段付き連結軸47と、この連結軸47にスプライン嵌合により上下摺動可能に外嵌され、該連結軸47の下部に螺入された止めネジ24の傘状頭部に係止される段付き胴部55a及びこの胴部55aの下端に連設された鏝状部55bとからなる摺動保持体55と、該摺動保持体55における前記胴部55aの段部と前記連結軸47の上方段部との間に縮装されたコイルバネ52と、を備えており、前記摺動保持体55は、前記コイルバネ52により常時下方に付勢されている。

【0030】前記左右に配置された研磨具保持具50A、50Bにおける前記摺動保持体55の前記鏝状部55bの下面側には、前記研磨具保持具50A、50Bの回転軸線Oa、Obを中心軸線とするように、それぞれ中空円筒状の傷取り用研磨具5A、ポリッシュ用研磨具5Bが、例えば、商標名ベロクロ等で市販されている面ファスナー等よりなる取着具57を介して脱着可能に取り付けられている。

【0031】前記傷取り用研磨具5A及び前記ポリッシュ用研磨具5Bは、それぞれ傷取り（荒削り）用の研磨材、ポリッシュ用の研磨材が付着せしめられており、それらの回転軸線Oa、Obが、研磨時に前記ディスク1の前記被研磨面1Aに対して垂直に配置されるとともに、それらの底面5Cが前記被研磨面1Aに押し当てられるようになっていて、図7を参照すればよくわかるように、その回転軸線Oa、Obが前記ディスク1が載置される前記ターンテーブル20及び前記回転軸25（前記スピンドル26）の回転軸線Ocを通る一直線上に配在され、かつ、前記傷取り用研磨具5A及び前記ポリ

ッシュ用研磨具5Bの回転直径Ds、Dtが、前記ディスク1の記録面（被研磨面）1Aにおける研磨すべき記録領域1bの半径方向の幅Lsより大きくされており、その外周部の一部が前記ディスク1の中央に位置する非記録領域1a及び前記ディスク1外にはみ出すようにされている。

【0032】そして、本実施形態においては、前記傷取り用研磨具5A及び前記ポリッシュ用研磨具5Bを前記ディスク1の前記被研磨面1Aに個別に押し当てることのできるようにすべく、前記研磨具保持具50A、50Bを備えた前記左側摺動昇降部材31及び前記右側摺動昇降部材32が、カム式昇降機構60により前記被研磨面1Aに対して選択的に接離するようにされている。

【0033】前記カム式昇降機構60は、図3に加えて図4及び図5を参照すればよくわかるように、前記上部ハウジング12の右側面に配設された選択ダイヤル61と、前記上部ハウジング12の左右方向に橋架されその右端部が前記選択ダイヤル61に連結固定されてそれと一体に回転するようにされた操作シャフト65と、該操作シャフト65の右端側における前記選択ダイヤル61より内側の前記上部ハウジング12内に取り付けられたクリックストップ62と、前記操作シャフト65の中央部より若干左側部分に偏心して取着固定され、前記左側摺動昇降部材31の前記左側カムリフト板67にそのリフト面（外周面）が摺接するようにされた左円板カム71と、この左円板カム71に対して180度の位相差をもって前記操作シャフト65の中央部より若干右側部分に偏心して取着固定され、前記右側摺動昇降部材32の前記右側カムリフト板69にそのリフト面（外周面）が摺接するようにされた右円板カム72と、を具備して構成されている。

【0034】かかるカム式昇降機構60においては、前記選択ダイヤル61を180度回す毎に、前記左側摺動昇降部材31と右側摺動昇降部材32とが交互に下降せしめられ、それに伴って、前記研磨具保持具50A、50Bに保持された前記傷取り用研磨具5A及び前記ポリッシュ用研磨具5Bが前記ディスク1の前記被研磨面1Aに交互に押し当てられ、さらに、前記選択ダイヤル61の操作角度を加減することにより、前記前記左側摺動昇降部材31と前記右側摺動昇降部材32の下降位置、つまり、前記ディスク1の前記被研磨面1Aに対する前記研磨具5A、5Bの圧接力を調節できるようになっている。なお、図6は、前記傷取り用研磨具5Aが最下降位置、前記ポリッシュ用研磨具5Bが最上昇位置にある状態が示されている。

【0035】また、前記上部ハウジング12には、その正面下部にそれを開け閉めするための掛止部15a付きの取手15が取り付けられ、該取手15の前記掛止部15aは、前記上部ハウジング12の開け閉め時にその内外方向に撓むようにされており、前記下部ハウジング1

1 の前記上面保持板 11 C の正面側端部に設けられた係止穴 11 a に挿入されて掛止されるようになっている。また、前記下部ハウジング 11 の背面上部には、図 4 に示される如くに、前記上部ハウジング 12 が最大に開かれたとき、前記ヒンジ部材 14、14 を係止する緩衝式係止部材 79、79 が設けられている。

【0036】さらに、前記下部ハウジング 11 の外周正面には、操作パネル 19 が取り付けられ、該操作パネル 19 には、起動スイッチ 16、作動ランプ 17、磨き時間設定用のタイマーダイヤル 18 等が配設され、また、前記下部ハウジング 11 の前記上面保持板 11 C の左端部には、図 2 に示される如くに、前記上部ハウジング 12 が閉められたとき、その底板 12 C により押圧されて電源回路（図示せず）が OFF 状態から ON 状態に切り換えられる安全スイッチ 75 が配設されている。本実施形態のディスククリーナ 10 は、前記安全スイッチ 75 が ON 状態でないと、つまり、前記上部ハウジング 12 が閉められた後でないと、前記起動スイッチ 16 を押しても、前記ギアードモーター 35 A、35 B が起動しないようになっている。

【0037】また、前記下部ハウジング 11 の前記上面板 11 C 及び前記内部保持板 11 D には、図 3 及び図 4 を参照すればよくわかるように、前記ディスク 1 を前記傷取り用研磨具 5 A 及び前記ポリッシュ用研磨具 5 B で磨いた際に出て来る削り屑や研磨材の粉等を前記下部ハウジング 11 内に排出するための多数の排出口 13、13、…が形成されており、前記下部ハウジング 11 内には、前記削り屑や研磨材の粉等を前記排出口 13、13、…を通じて吸引すべく、前記したファン 100 が設けられ、図 2 に示される如くに、前記下部ハウジング 11 の一側面には、前記ファン 100 により吸引された空気中の前記削り屑や研磨材の粉を捕集するためのフィルタ付きの排風口 130 が設けられている。

【0038】上記構成に加えて、本実施形態のディスククリーナ 10 では、前記上部ハウジング 12（前記モーター室 12 S）の前記底板 12 C に形成された前記軸遊挿穴 12 c、12 c を介して前記モーター室 12 S に削り屑等 K（図 6 参照）が侵入するのを阻止すべく、前記底板 12 C と前記ギアードモーター 35 A、35 B との間に、図 8 に示される如くの、高さ（装着時の、前記回転軸線 O a、O b、O c に沿った）方向に伸縮可能な、中央部が径方向に膨らんだ樽状の一对のゴム（CR ゴム）製の筒状弾性体 200、200 が、前記モーター 35 A、35 B の前記出力軸 35 a、35 a を包囲するとともに、前記底板 12 C と前記モーター 35 A、35 B との間を常時封止するように配設されている。

【0039】具体的には、前記筒状弾性体 200 は、その上下端部に大、小の上側鉤状部 210 及び下側鉤状部 220 が設けられており、その上端部（前記上側鉤状部 210）は、前記モーター 35 A、35 B の下端面部

（前端面部）に接着剤、両面テープ等 230 により固着され、その下端部（前記下側鉤状部 220）が、前記研磨具 35 A、35 B が前記ディスク 1 の前記被研磨面 1 A に押圧せしめられているとき（研磨時）においても、前記底板 12 C に弾発的に圧接せしめられるように、全体が若干圧縮せしめられた状態で、前記モーター 35 A、35 B と前記底板 12 C との間に介装されている。

【0040】このような構成とされた本実施形態のディスククリーナ 10 を使用して、ディスク 1 の傷や汚れを除去する際には、通常、まず、上部ハウジング 12 を開け（図 2 に示される状態）、ターンテーブル 20 上にディスク 1 を、その被研磨面 1 A を上にして置き、前記上部ハウジング 12 を閉める。続いて、前記ディスク 1 の傷の有無等を勘案して、選択ダイヤル 61 を回して傷取り用研磨具 5 A 及びポリッシュ用研磨具 5 B のいずれで磨くのかを選択する（汚れだけで傷が無い場合は、ポリッシュ用研磨具 5 B を選択する）とともに、前記ディスク 1 に対する前記研磨具 5 A 又は 5 B の押し当て力を調節し、さらに、タイマーダイヤル 18 を適宜にセットして起動スイッチ 16 を押す。

【0041】これにより、前記選択ダイヤル 61 により選択された前記研磨具 5 A 又は 5 B が下降して前記ディスク 1 の前記被研磨面 1 A に押し当てられ、図 3、図 6 に示される如くに、前記研磨具 5 A、5 B の回転軸線 O a、O b が前記被研磨面（1 A）に対して垂直に配置された状態で、前記ディスク 1 の前記被研磨面 1 A に押し当てられている前記研磨具 5 A 又は 5 B が回転し、それに伴い、前記研磨具 5 A 又は 5 B と前記被研磨面 1 A との間の摩擦力により前記ディスク 1 が回転せしめられて、前記ディスク 1 の前記被研磨面 1 A が磨かれると同時に、前記ディスク 1 の前記研磨具 5 A、5 B との間の摩擦力による回転駆動力が、前記ターンテーブル 20、前記回転軸 25、前記ファン駆動ホイール 90 を介して前記ファン 100（の回転軸 101）に伝達されて、該ファン 100 が前記ターンテーブル 20 に機械的に連動して回転駆動せしめられ、該ファン 100 により、削り屑や研磨材の粉等が上面保持板 11 C 側から吸引排除される。

【0042】次に、使用研磨具を傷取り用研磨具 5 A からポリッシュ用研磨具 5 B に替える場合には、前記選択ダイヤル 61 を約 180 度回して前記操作を繰り返し、当該ディスク 1 の磨き作業が終われば、前記上部ハウジング 12 を開けて前記ディスク 1 を取り出し、以後、前記操作を繰り返す。

【0043】前記のように、本実施形態のディスククリーナ 10 においては、前記傷取り用研磨具 5 A 及び前記ポリッシュ用研磨具 5 B の回転軸線 O a、O b が、研磨時に前記被研磨面 1 A に対して垂直に配置されるので、前記被研磨面 1 A に対する前記研磨具 5 A、5 B の当たりが均一化され、その結果、前記研磨具 5 A、5 B に偏

等化されやすくなり、前記ディスク 1 の前記被研磨面 1A を一層均等に磨くことができる。

【0049】また、前記研磨具5A、5Bの回転直径Ds、Dtが、前記ディスク1の被研磨面1Aにおける研磨すべき領域1bの半径方向の幅Lsより大きくされていることにより、前記研磨具5A、5B及び又は前記ディスク1を、該ディスク1の径方向に移動させることを要しないで、前記ディスク1の前記被研磨面1Aにおける研磨すべき全領域を磨くことができ、装置構造・機構が簡素化される。

【0050】さらに、前記研磨具5A、5Bが、研磨時にコイルパネ52により前記ディスク1側に付勢されるようになっているので、前記ディスク1に対する前記研磨具5A、5Bの接触面での押し当て力が均一化され、前記ディスク1の前記被研磨面1Aをより均等に磨くことができる。

【００５１】前記作用効果に加え、本実施形態のディスククリーナ１０においては、前記モーター室１２Ｓの前記底板１２Ｃと前記モーター５Ａ、５Ｂとの間に、高さ方向に伸縮可能な樽状の筒状弾性体２００が、前記モーター５Ａ、５Ｂの前記出力軸３５ａを包囲するとともに、前記底板１２Ｃと前記モーター３５Ａ、３５Ｂとに常時固着乃至圧接してそれらの間を常時封止するように配設されている。

【００５２】前記筒状弾性体２００は、前記モーター３５Ａ、３５Ｂ及び前記研磨具５Ａ、５Ｂが、前記ディスク１の前記被研磨面１Ａから離間する方向に上昇せしめられている非研磨時においては、図３、図６においてポリッシュ用研磨具５Ｂ側のものの如くに、伸張した状態でその上側銑状部２１０及び下側銑状部２２０を、前記モーター３５Ｂ及び前記底板１２Ｃ側に固着乃至圧接せしめられており、また、前記ディスク１の研磨時においては、前記モーター３５Ａ、３５Ｂ及び前記研磨具５Ａ、５Ｂが下降せしめられて、前記研磨具５Ａ、５Ｂが前記ディスク１の前記被研磨面１Ａに押し当てられるのであるが、この際、前記筒状弾性体２００は、図３、図６において荒削り用の研磨具５Ａ側のものの如くに、前記モーター３５Ａに押圧されて高さ方向に圧縮せしめられて、その中央部が径方向に張り出すが、その上側銑状部２１０及び下側銑状部２２０が、前記モーター３５Ｂ及び前記底板１２Ｃに、より強く固着乃至圧接せしめられて、前記モーター５Ａの最下降時にはクッション材としても機能する。

【0053】このように、本実施形態のディスクリーナ10では、前記筒状弾性体200の上下端部210、220が、前記モーター35A、35B及び前記底板12Cから離れることなく、それらの間を常時封止しているので、図6に示される如くに、前記ディスク1を前記研磨具5A、5Bで磨いた際に出て来る削り屑や研磨材の粉等Kが、前記モーター室12Sの前記底板12Cに

形成された前記軸遊挿穴 12c、12c と前記モーター 35A、35B の前記出力軸 35a (前記研磨具保持具 50A、50B) との間に形成される隙間を介して前記モーター室 12S 内に侵入してしまうことを、効果的に防止できる。

【0054】以上、本発明の一実施形態について詳述したが、本発明は、前記実施形態に限定されるものではなく、特許請求の範囲に記載された発明の精神を逸脱しない範囲で、設計において、種々の変更ができるものである。例えば、前記実施形態のディスククリーナ 10 は、CD 等の 5 インチのディスクの片面を研磨対象としたものであるが、それに限られず、レーザーディスク等のサイズの異なる他のディスクを研磨対象としたものや、ディスクの両面を研磨対象としたもの等にも当業者であれば、同一技術思想に則って容易に適用できる。

【0055】

【発明の効果】以上の説明から理解されるように、本発明に係るディスククリーナは、モーター及びモーター室の底板との間を常時封止するように筒状弾性体が配設されるので、ディスクを研磨具で磨いた際に出て来る削り屑や研磨材の粉等が、前記モーター室の底板に形成された軸遊挿穴とモーターの出力軸 (研磨具保持具) との間に形成される隙間を介して前記モーター室内に侵入してしまうことを、効果的に防止できる。また、前記筒状弾性体は、クッション材としても機能する。

【図面の簡単な説明】

【図 1】本発明に係るディスククリーナー実施形態の外観を示す斜視図。

【図 2】図 1 に示されるディスククリーナの上部ハウジングを開けた状態を示す斜視図。

【図 3】図 1 の III-III 矢視断面図。

【図 4】図 1 の IV-IV 矢視断面図。

【図 5】図 1 の V-V 矢視断面図。

【図 6】図 3 に示される研磨具保持具周辺の拡大断面図。

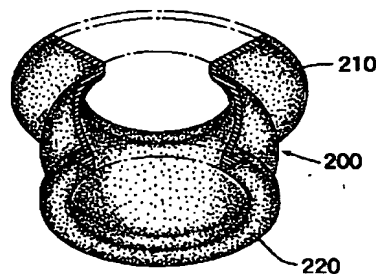
【図 7】図 1 に示されるディスククリーナの研磨具とディスクとの配置関係を示す図。

【図 8】図 1 ～図 7 に示されるディスククリーナに使用される筒状弾性体を示す部分切欠斜視図。

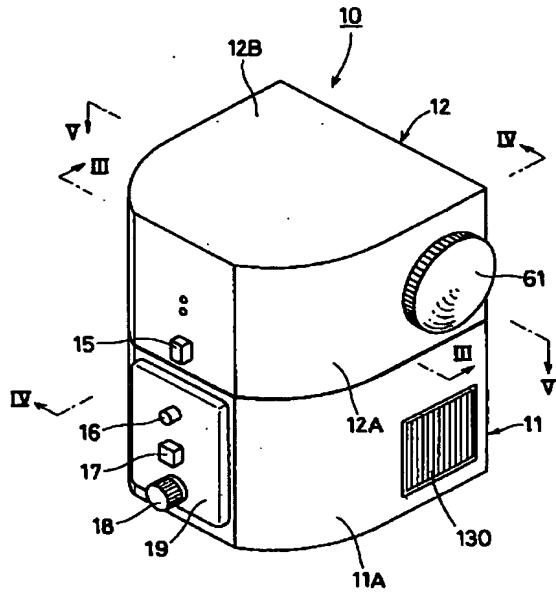
【符号の説明】

- | | |
|---------|----------------|
| 10 | ディスク (CD) |
| 1A | 被研磨面 |
| 5A | 傷取り用研磨具 |
| 5B | ポリッシュ用研磨具 |
| 10 | ディスククリーナ |
| 11 | 下部ハウジング |
| 11C | 上面板 |
| 12 | 上部ハウジング |
| 12C | 底板 |
| 12c | 軸遊挿穴 |
| 20 | 12S モーター室 |
| 14 | ヒンジ部材 |
| 20 | ターンテーブル |
| 20S | ディスク研磨室 |
| 35A、35B | ギアードモーター |
| 35a | 出力軸 |
| 50A、50B | 研磨具保持具 |
| 200 | 筒状弾性体 |
| 210 | 上側鏢状部 |
| 220 | 下側鏢状部 |
| 30 | Oa、Ob 研磨具の回転軸線 |
| K | 削り屑等 |

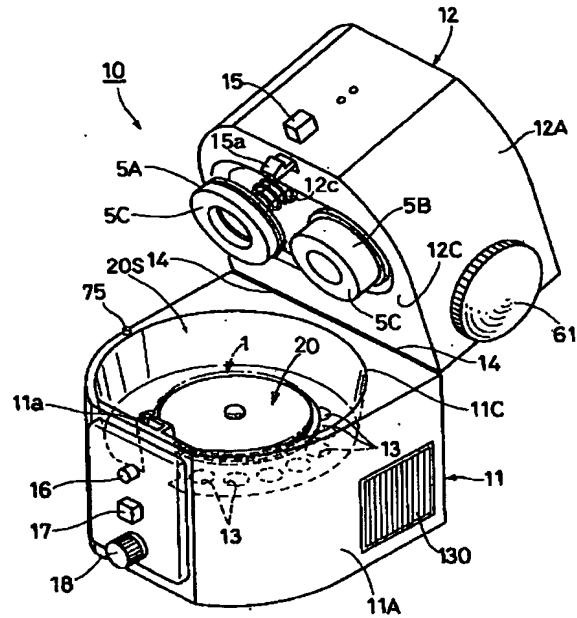
【図 8】



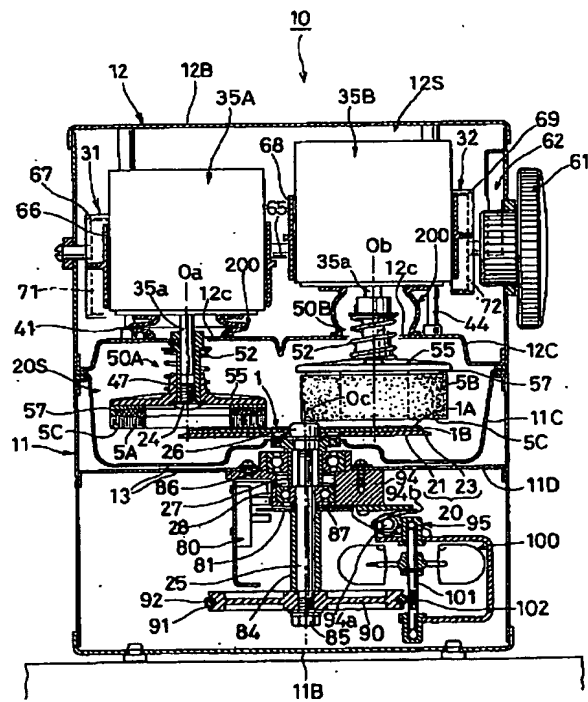
【図1】



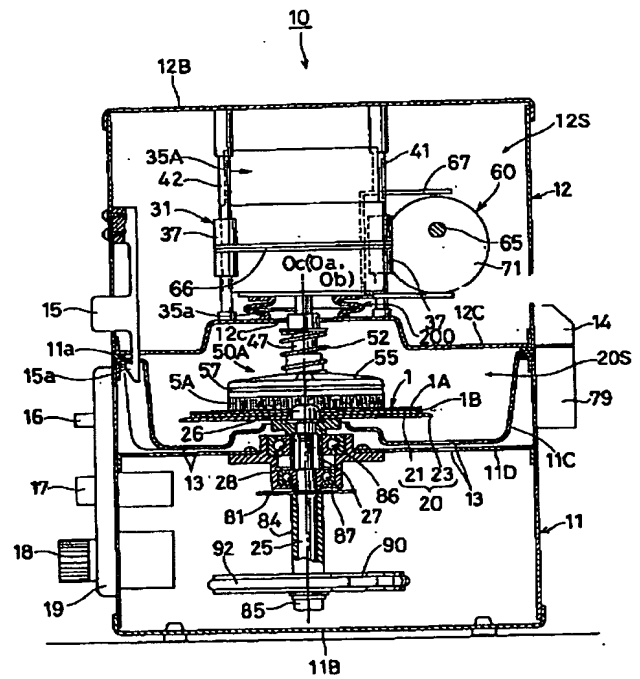
【図2】



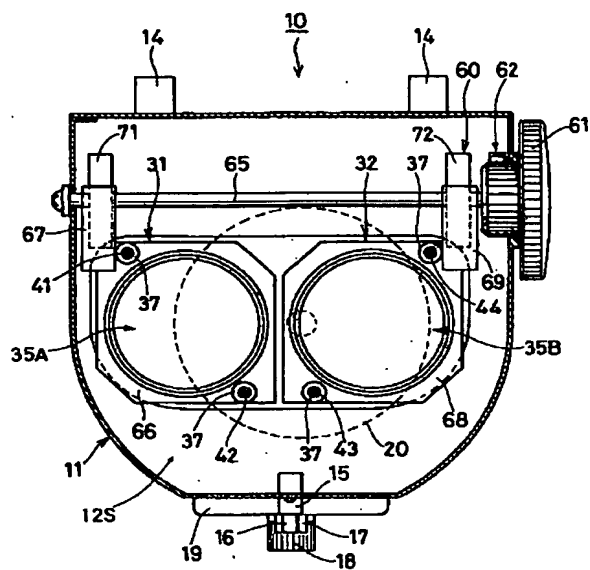
【図3】



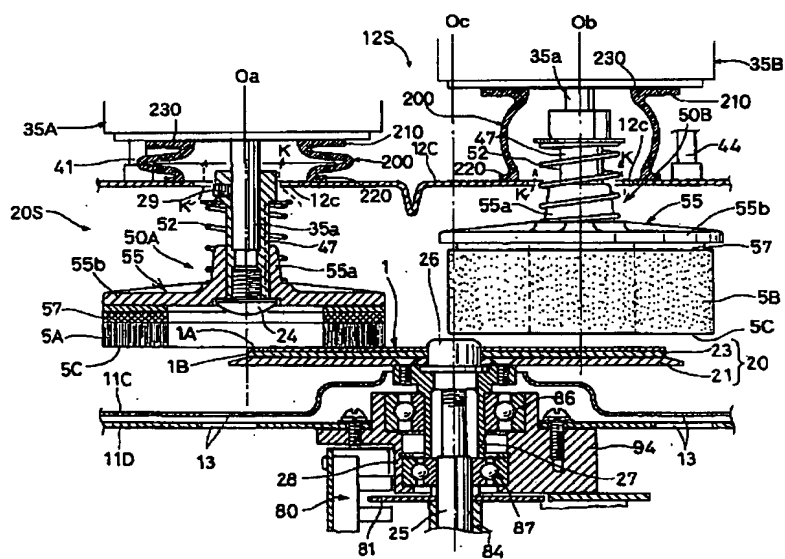
【図4】



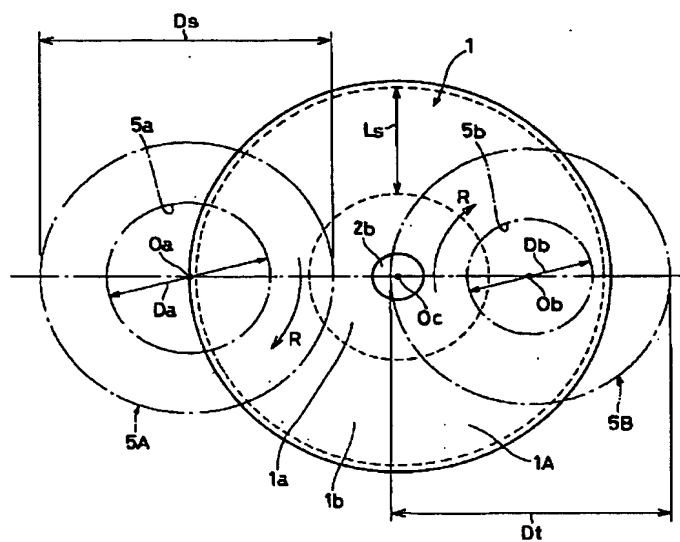
【図 5】



【図 6】



【図7】



フロントページの続き

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